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Determinants of College Enrollment in the State of Illinois

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DETERMINANTS OF COLLEGE ENROLLMENT IN THE STATE OF ILLINOIS

by

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Submitted in Partial Fulfillment of the Requirements for the
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AN ABSTRACT OF THE RESEARCH PAPER OF

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This paper analyses the effect of various cost, test achievement, and admission standard variables on the total undergraduate degree-seeking enrollment at 42 four-year institutions in the State of Illinois. Ordinary Least Squares is used to estimate the effect of changes in these various types of variables and to determine how schools can attempt to increase their enrollment numbers by making changes to the various variables included that are within their administrative control. This study finds that increasing average monthly faculty salary and decreasing the average SAT score of students will have the greatest positive effects on enrollment.

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I. Introduction

Declining postsecondary education enrollment in the United States has recently become a concern for many colleges and universities. After a long period of increasing postsecondary education enrollment, the United States' combined public and private school systems experienced noticeable declines in the total number of students. The National Center for Education Statistics reports that, "While total undergraduate enrollment increased by 37 percent between 2000 and 2010, enrollment in 2013 was 3 percent lower than in 2010," (National Center for Education Statistics 2015). Similarly, the United States Census Bureau, which has been collecting data on college enrollment since 1966, finds that, "College enrollment declined by close to half a million (463,000) between 2012 and 2013, marking the second year in a row that a drop of this magnitude has occurred," (2013). The United States Census Bureau also finds that, "The cumulative two-year drop of 930,000 was larger than any college enrollment drop before the recent recession…," (2013). Of the varying levels and cost structures that make up the US postsecondary education system, the United States Census Bureau finds the most substantial fall in enrollment to be in two-year or junior colleges, while four-year colleges actually saw a slight increase (2013). The United States Census Bureau also notes that, "'The drop-off in total college enrollment the last two years follows a period of expansion: between 2006 and 2011, college enrollment grew by 3.2 million,' said Kurt Bauman, chief of the Census Bureau's Education and Social Stratification Branch. 'This level of growth exceeded the total enrollment increase of the previous 10 years combined (2.0 million from 1996 to 2006),'" (2013). Ronald A. Wirtz, in an article in the *Fedgazette,* acknowledges that the postsecondary enrollment declines have taken

place amidst rising encouragement to achieve a higher level of education, as well as, documented financial benefits received by those who have obtained higher levels of education, and he mentions that part of the reason for the declining enrollment is the cyclical economy pulling people out of the education system and into the recovering job market (2015).

The main objective of this research paper is to determine what factors within the postsecondary institutions' control are the most influential on the institution's enrollment. Amidst the falling enrollment across the US and in the state of Illinois, it is important for the institutions to be aware of their most effective options in attracting and maintaining students. This particular study exams the enrollment of 42 four-year predominantly bachelor's degree-granting colleges and universities in the state of Illinois for the 2009-10 through 2013-14 school years and how various factors that are within the institutions control impact the enrollment of the institution while controlling for the state of the economy using a variable for the county unemployment rate. This study adds to the existing literature by using newly available data accounting for numerous variables that have not previously been examined in relation to postsecondary enrollment.

II. Literature Review

There is an abundance of research that attempts to explain college enrollment numbers, but none that approach the question in the manner that this research does. The two past studies that are most applicable to this research are "The Demand for Higher Education in the United States, 1919-1964" by Robert Campbell and Barry N. Siegel published in the *American Economic Review* in 1967 and "Determinants and

Distributional Aspects of Enrollment in U.S. Higher Education" by Arthur J Corazzini, Dennis J. Dugan, and Henry G. Grabowski published in the *Journal of Human Resources* in 1972.

Campbell and Siegel's "The Demand for Higher Education in the United States, 1919-1964" studies the changes in the aggregate demand for higher education in the United States post-World War I. Their dependent variable is the ratio of undergraduate degree enrollment in four-year institutions to the number of eligible 18-24 year olds for a given year; an eligible 18-24 year old is determined to be an individual within the age range that has a high school diploma and is not a member of the armed forces. The independent variables of the model are the average real tuition and the real disposable income per household for a given year. They hypothesize that there will be a negative price effect, that demand for education will decline as the average real tuition rises, and a positive income effect, that demand for education will rise as the real income per household rises. Campbell and Siegel run a log-log model and find results consistent with their hypotheses. However, although the years analyzed span over a large time frame, Campbell and Siegel only have nine years of analysis because of lack of data availability. The minimal observations lead to large standard errors, which makes it hard to come to conclusive results. Even though this research leaves room for error, it sheds light on the possible relationships between enrollment determinants and the demand for higher education.

Corazzini, Dugan, and Grabowski's "Determinants and Distributional Aspects of Enrollment in U.S. Higher Education" examines the effect of both demand-side factors and supply-side constraints on the percentage of tenth grade high school students in a

particular state in 1960 that enrolled in college in 1963. The dependent variables included in their model are state average tuition rates for junior colleges, public four-year universities, private four-year universities, and teacher colleges; the average earnings of production workers in the state; the state unemployment rate; the average level of father's education in the state; and the student's performance on achievement tests. Similar to Campbell and Siegel's study, the average tuition rates are expected to have a negative effect on enrollment percentage. The average earnings of production workers in the state is the wage forgone or the opportunity cost of attending college and is expected to have a negative relationship with the enrollment percentage. The unemployment rate is expected to have a positive relationship with the enrollment percentage because a higher unemployment rate signals difficulty in finding a job if the labor market is chosen over further education. The father's average education variable is believed to be positively correlated with family income and the ability of the eligible individual to finance college and is, therefore, expected to have a positive effect. Lastly, students' performance on achievement exams are supposed to be representative of students' ability to be accepted into college, as well as, an indication of their preference for education and is expected to have a positive relationship. Corazzini, Dugan, and Grabowski also stratify their analysis to account for the effects of the independent variables on various socioeconomic groups, but the stratified groups are not of interest to the study that will be presented here. The general enrollment function yields negative relationships between all of the tuition averages and the enrollment rate, a positive relationship between the average production wage and the enrollment rate, a positive relationship between the unemployment rate and the enrollment rate, a positive

relationship between the average father's education level and the enrollment rate, and a positive relationship between the students' performance on achievement tests and the enrollment rate. All of the relationships were statistically significant at the five percent level or above, with the exception of the average tuition for teacher colleges and the average wage for production workers.

This study incorporates variables for tuition, the unemployment rate, and for student performance on achievement tests, but it also introduces newly available variables into the model. Also, tuition and achievement test scores are discussed from the perspective of the supplier of education, or the institution, and how they can attempt to manipulate these various variables in order to attain higher enrollment numbers or increase the demand for their institution. The unemployment rate is included as a control for the state of the economy and is not addressed as a variable that the institution has any control over. Other important differences of this study are that it analyses the actual enrollment number rather than the enrollment as a portion or ratio of the eligible population, and it analyses the dependent variable separately for each institution studied rather than the aggregate enrollment of all.

III. Methods and Data

Data for this analysis is collected from two sources. The College Scorecard Data put out by the United States Department of Labor is used to obtain information on the total enrollment of undergraduate degree seeking students at the institution (UGDS), the in state tuition and fees of the institution (TUITIONFEE_IN), the out of state tuition and fees of the institution (TUITIONFEE_OUT), the midpoint of the ACT English score

(ACTENMID), the midpoint of the ACT math score (ACTMTMID), the average SAT score (SAT_AVG), the median debt of students that have completed their degree at the institution (GRAD_DEBT_MDN), whether the institution is public or private (CONTROL), the admission rate of the institution (ADM_RATE), the retention rate of first-time full time students at the institution (RET_FT4), the average faculty salary per month at the institution (AVGFACSAL), and the rate of students that completed their degree within six years (C150_4). These variables are collected for each institution in the sample for five consecutive years, 2009 through 2013, and are all based on the fall semester that typically begins in August. Data on the unemployment rate it collected from the Bureau of Labor Statistics' "Local Area Unemployment Statistics" Survey that collects employment data for counties and metropolitan areas. This study utilizes the monthly county unemployment rates for the counties that the institutions are in. The particular variable used for analysis is the average of the monthly unemployment rates over the year prior to the beginning of the fall semester (COUNTY_UNEMP), so the value for COUNTY_UNEMP for 2009 is an average of the September 2008 through August 2009 county unemployment rates for the given county. All of these variables are obtained for a total of 42 four-year, predominantly bachelor's degree granting institutions in the state of Illinois for the years 2009 through 2013. The institutions included in the sample, as well as, their respective cities, counties, and CONTROL (0 for public, 1 for private) are listed in Table 1, and the descriptive statistics of the variables are shown in Table 2. Descriptive statistics are all rounded to the nearest thousandth.

Table 1 – Institutions

INSTNM	CITY	COUNTY	CONTROL
Aurora University	Aurora	Will	1
Blackburn College	Carlinville	Macoupin	1
Bradley University	Peoria	Peoria	1
Chicago State University	Chicago	Cook	0
Concordia University-Chicago	River Forest	Cook	1
DePaul University	Chicago	Cook	1
Dominican University	River Forest	Cook	1
Eastern Illinois University	Charleston	Coles	0
Elmhurst College	Elmhurst	DuPage	1
Eureka College	Eureka	Woodford	1
Illinois Institute of Technology	Chicago	Cook	1
Illinois State University	Normal	McLean	0
Illinois Wesleyan University	Bloomington	McLean	1
Lewis University	Romeoville	Will	1
Lincoln Christian University	Lincoln	Logan	1
Loyola University Chicago	Chicago	Cook	1
McKendree University	Lebanon	St Claire	1
Millikin University	Decatur	Macon	1
Monmouth College	Monmouth	Warren	1
North Central College	Naperville	Will	1
North Park University	Chicago	Cook	1
Northeastern Illinois University	Chicago	Cook	0
Northern Illinois University	Dekalb	Dekalb	0
Northwestern University	Evanston	Cook	1
Olivet Nazarene University	Bourbonnais	Kankakee	1
Quincy University	Quincy	Adams	1
Rockford University	Rockford	Winnebago	1
Roosevelt University	Chicago	Cook	1
Saint Xavier University	Chicago	Cook	1
School of the Art Institute of Chicago	Chicago	Cook	1
Southern Illinois University Carbondale	Carbondale	Jackson	0
Southern Illinois University Edwardsville	Edwardsville	Madison	0
Trinity Christian College	Palos Heights	Cook	1
Trinity International University-Illinois	Deerfield	Lake	1
University of Chicago	Chicago	Cook	1
University of Illinois at Chicago	Chicago	Cook	0
University of Illinois at Springfield	Springfield	Sangamon	0
University of Illinois at Urbana-Champaign	Champaign	Champaign	0
University of St Francis	Joliet	Will	1
VanderCook College of Music	Chicago	Cook	1
Western Illinois University	Macomb	McDonough	0
Wheaton College	Wheaton	DuPage	1

Table 2 – Descriptive Statistics

Variable	Observations	Mean	Std. Deviation	Min.	Max.
UGDS	210	5762.324	6443.905	104.000	31663.000
TUITIONFEE_IN	210	22906.260	9486.045	7082.000	47514.000
TUITIONFEE_OUT	210	25373.250	7166.636	12962.000	47514.000
ACTENMID	210	23.886	3.317	17.000	34.000
ACTMTMID	210	23.252	3.298	16.000	34.000
SAT_AVG	210	1088.138	123.474	830.000	1504.000
GRAD_DEBT_MDN	210	21575.460	3313.851	12500.000	28000.500
CONTROL	210	0.738	0.441	0.000	1.000
ADM_RATE	210	0.635	0.163	0.088	0.981
RET_FT4	210	0.768	0.104	0.484	0.993
AVGFACSAL	210	7490.524	2068.526	3992.000	16589.000
C150_4	210	0.588	0.160	0.139	0.952
COUNTY_UNEMP	210	9.320	1.488	6.100	15.000

Of the 42 schools in the sample, there are eleven public four-year universities and 31 private four-year universities. The average UGDS for the 210 observations is 5,762.324 students with a standard deviation of plus or minus 6,443.905 students. The large standard deviation is likely a result of the University of Illinois at Urbana-Champaign's large enrollment observations, which can be seen in Figure 1. Excluding the institution for being an outlier was considered, but the variables are eventually transformed into logarithmic form, which minimizes the range of differences drastically. However, Figures 1-3 of the UGDS trends for all of the institutions in the sample is shown to illustrate the different levels of enrollment that exist across the sample and to show the changes in each institution's enrollment over the years that are observed for the analysis. As the figures depict, not all institutions in the sample show the same trend. From just a quick glance one can see that some institutions show slight increases in their enrollment over the five-year span, some show declines that appear to begin around 2011, and others do not appear to have any noticeable change.

Figure 1 – UGDS Trends 1

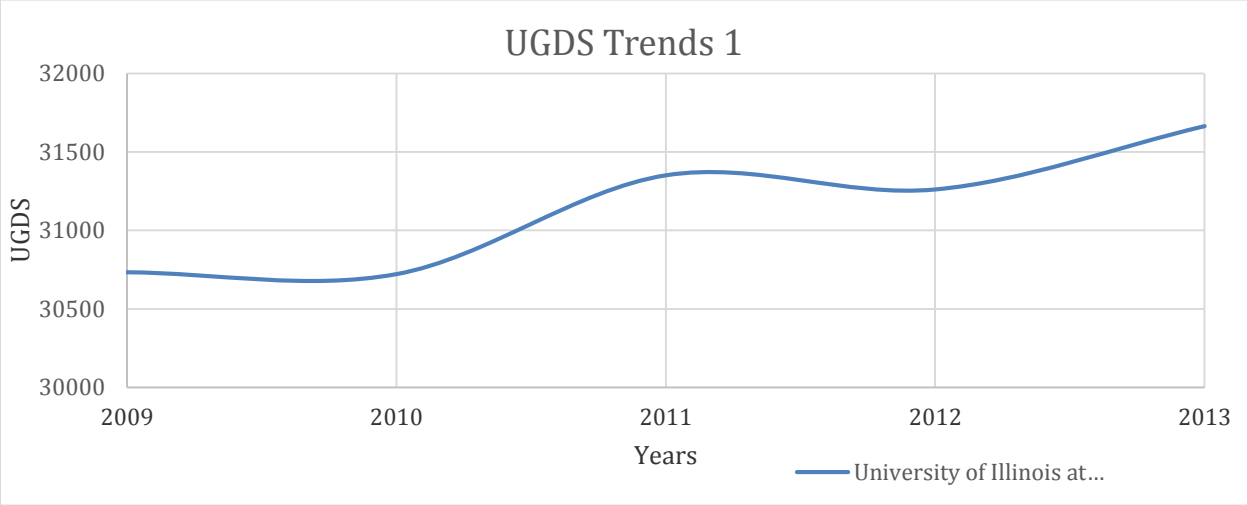


Figure 2 – UGDS Trends 2

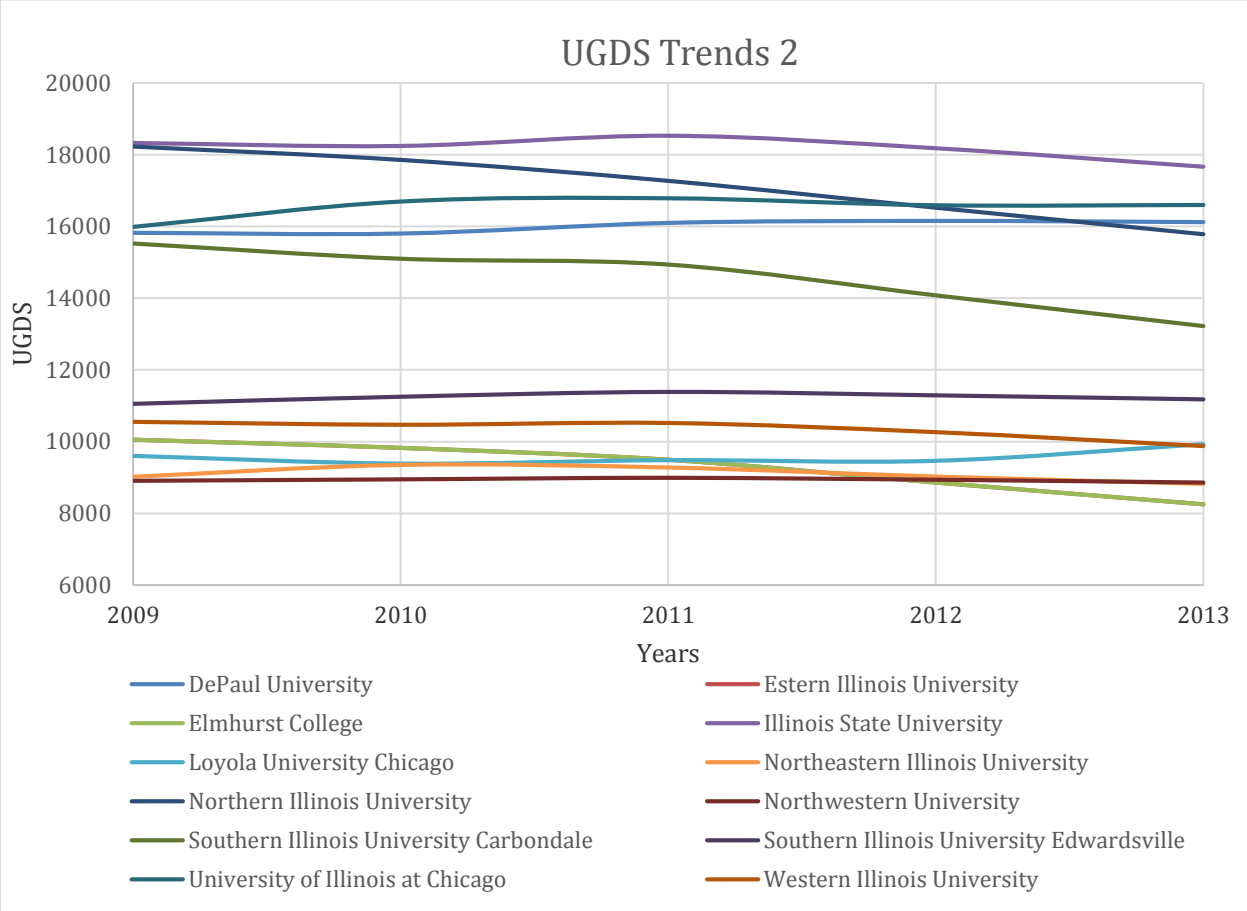
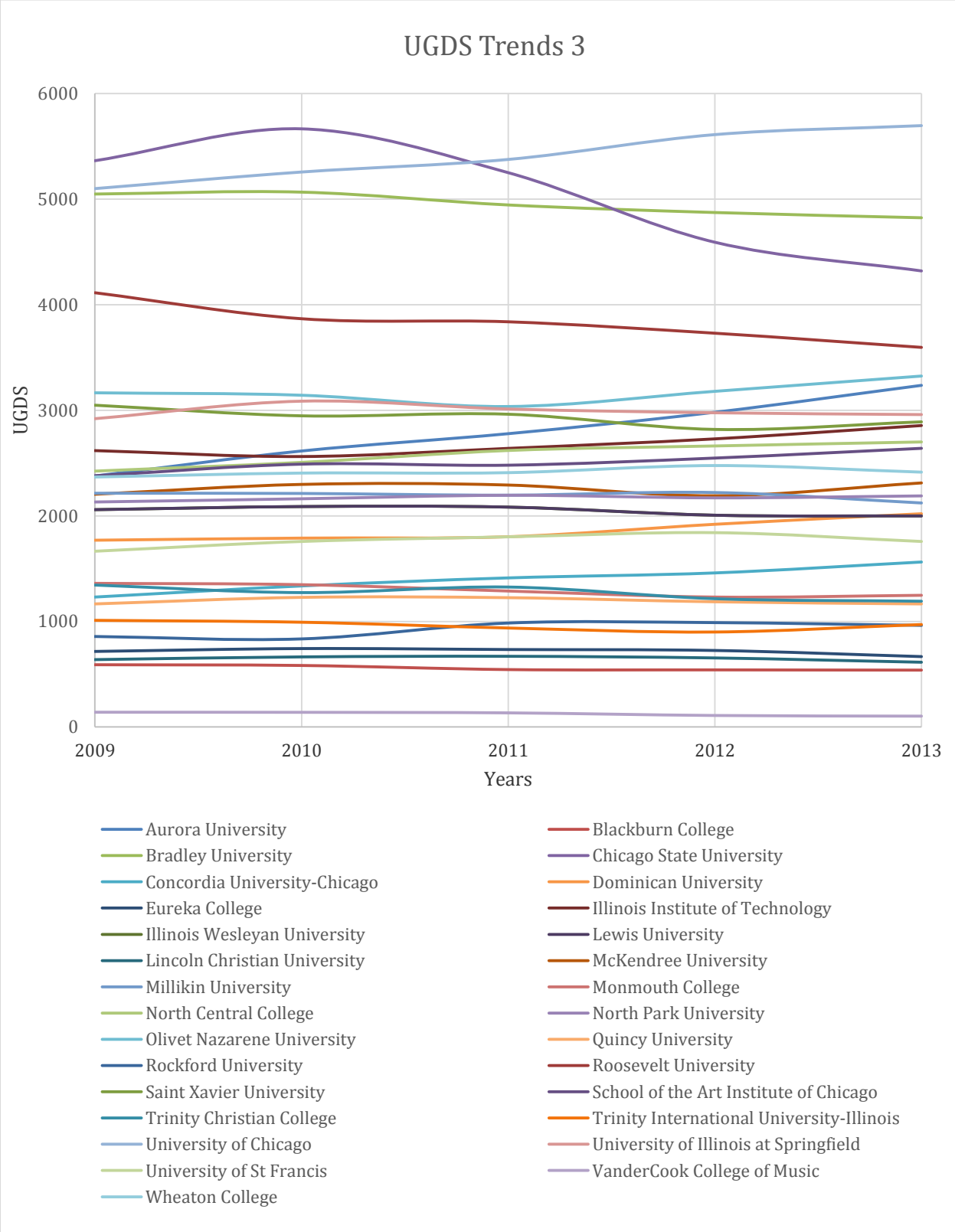


Figure 3 – UGDS Trends 3



The dependent variable, UGDS, is regressed on the independent variables using a linear regression model to determine the direction and significance levels of the relationship between each independent variable and the dependent variable. The basic linear equation is then:

$$UGDS_{it} = \beta_0 + \beta 1\,(TUITIONFEE\_IN_{it}) + \beta_2\,(TUITIONFEE\_OUT_{it}) + \beta_3\,(ACTENMID_{it}) + \beta_4\,(ACTMTMID_{it}) + \beta_5\,(SAT\_AVG_{it}) + \beta_6\,(GRAD\_DEBT\_MDN_{it}) + \beta_7\,(CONTROL_i) + \beta_8\,(ADM\_RATE_{it}) + \beta_9\,(RET\_FT4_{it}) + \beta_{10}\,(AVGFACSAL_{it}) + \beta_{11}\,(C150\_4_{it}) + \beta_{12}\,(COUNTY\_UNEMP_{it}) + \varepsilon_{it} \quad (1),$$

where $UGDS_{it}$ is the total enrollment of undergraduate degree seeking students at institution *i* in year *t,* $TUITIONFEE\_IN_{it}$ is the in state tuition and fees at institution *i* in year *t,* $TUITIONFEE\_OUT_{it}$ is the out of state tuition and fees at institution *i* in year *t,* $ACTENMID_{it}$ is the midpoint of the ACT English scores at institution *i* in year *t,* $ACTMTMID_{it}$ is the midpoint of the ACT math scores at institution *i* in year *t,* SAT_AVG_{it} is the average SAT score at institution *i* in year *t,* $GRAD\_DEBT\_MDN_{it}$ is the median amount of debt accumulated by graduates that complete their bachelor's degree at institution *i* in year *t,* $CONTROL_i$ is a dummy variable that represents whether institution *i* is public or private, ADM_RATE_{it} is the percentage of admitted students out of all applicants at institution *i* in year *t,* RET_FT4_{it} is the retention rate of first-time full time students at institution *i* in year *t,* $AVGFACSAL_{it}$ is the average monthly faculty salary at institution *i* in year *t,* $C150\_4_{it}$ is the percentage of students that completed their degree within six years at institution *i* in year *t,* $COUNTY\_UNEMP_{it}$ is the average monthly

unemployment rate for the county that institution *i* is in over the twelve months prior to the start of the fall semester for the year *t,* and ε_{it} is the error term. Similar to the previous studies that have been conducted, the cost variables, TUITIONFEE_IN and TUITIONFEE_OUT, are expected to have a negative effect on enrollment because, in general, the more a good or service costs the less demand there is for it. All of the test score variables, ACTENMID, ACTMTMID, and SAT_AVG, are also expected to have a negative effect on enrollment because, as the midpoint or average of the test score rises, the number of applicants with test scores meeting the criteria is likely to decline. GRAD_DEBT_MDN is expected to have a negative effect as well because, similar to the intuition for the tuition and fee cost variables, a greater amount of debt is likely to deter people from demanding education services from that institution. The CONTROL variable is expected to have a negative effect as well since private schools are often viewed as being more expensive than public schools. The admission rate, ADM_RATE, is expected to have a positive effect on enrollment because the more students admitted out of the students that apply means more enrollment, however, institutions could have a high enrollment and a low admission rate as a result of there being a high demand for that particular institution or a large number of applicants. Retention rate, RET_FT4, is expected to have a positive effect because maintaining students over the years means re-enrollment in the consecutive years. The average monthly faculty salary, AVGFACSAL, is expected to have a positive effect because a higher salary could be representative of the faculty's quality as teachers and their credentials. The completion rate, C150_4, is likely to have a positive effect because applicants are likely to choose to attend an institution that they feel will be an efficient use of their time, not one where

a large proportion take more than six years to complete a bachelor's degree, however, a low completion rate could mean that students are enrolling for more than six years which would increase enrollment. Lastly, the variable that controls for the state of the economy, COUNT_UNEMP, is expected to have a negative effect on the enrollment because high unemployment means less job opportunities, and less job opportunities makes the job market less attractive and the education service more attractive because it provides more skills and opportunities within the job market after completion.

The linear regression model specified in equation 1 is estimated and tested for the presence of heteroscedasticity using the Breusch-Pagan test and the White's test, both of which show evidence of the presence of heteroscedasticity in the model. In order to control for the presence of heteroscedasticity, all of the count variables are log transformed. The only variable in the model that is not a count variable is the dummy variable for whether the institution is public or private, the CONTROL variable. Then, the same model is estimated using the log transformed variables. The second equation is hence:

$$\log\_UGDS_{it} = \beta_0 + \beta 1\,(\log\_TUITIONFEE\_IN_{it}) + \beta_2\,(\log\_TUITIONFEE\_OUT_{it}) + \beta_3\,(\log\_ACTENMID_{it}) + \beta_4\,(\log\_ACTMTMID_{it}) + \beta_5\,(\log\_SAT\_AVG_{it}) + \beta_6\,(\log\_GRAD\_DEBT\_MDN_{it}) + \beta_7\,(CONTROL_i) + \beta_8\,(\log\_ADM\_RATE_{it}) + \beta_9\,(\log\_RET\_FT4_{it}) + \beta_{10}\,(\log\_AVGFACSAL_{it}) + \beta_{11}\,(\log\_C150\_4_{it}) + \beta_{12}\,(\log\_COUNTY\_UNEMP_{it}) + \varepsilon_{it} \quad (2),$$

where each of the variables is now the log of the original variable, except for the CONTROL variable, which has not changed.

IV. – Results

The linear regression model, equation 1, is estimated and the results are displayed in Table 3. Because this model includes the original count variables, the results are interpreted as a one unit increase is the independent variable results in an increase or decrease of the actual value found in the dependent variable; for example, a one unit increase in the TUITIONFEE_IN variable results in a decrease in UGDS of .5847, or about a sixth of a student. The tuition and fees variables, the midpoint of the ACT math score, whether the institution is public or private, the admission rate, the average faculty salary, and the completion rate are all statistically significant at the five percent level or above. However, both the TUITIONFEE_OUT and the ACTMTMID have the opposite sign of what was expected. The midpoint of the ACT English score, the average SAT score, the county unemployment rate, the median debt of graduates, and the retention rate are all insignificant, and the median debt of graduates does not have the expected sign. The R-squared of this model is 0.7208, so this model appears to explain about 72.1 percent of the variation in the dependent variable, UGDS.

This regression model is then tested for heteroscedasticity, as mentioned in the previous section, and, because there is evidence of heteroscedasticity, all of the variables are log transformed, with the exception of the dummy variable for whether the institution is public or private. After the variables are log transformed, the log-log regression model, equation 2, is estimated, and the results are displayed in Table 4.

Table 3 – Equation 1 Results

Independent Variables	Dependent Variable UGDS
TUITIONFEE_IN	-.5847***
	(.1484)
TUITIONFEE_OUT	.4457***
	(.1428)
ACTENMID	-263.4528
	(436.0903)
ACTMTMID	898.4277**
	(357.5206)
SAT_AVG	-16.8892
	(14.3380)
COUNTY_UNEMP	246.2831
	(191.4572)
GRAD_DEBT_MDN	.0175
	(.0892)
CONTROL	-4067.737**
	(1810.793)
ADM_RATE	5610.731***
	(1853.007)
RET_FT4	1754.659
	(4784.606)
AVGFACSAL	1.2071***
	(.2619)
C150_4	8239.386**
	(3606.155)
constant	-6837.425
	(6054.478)
R-Squared	0.7208
n	210

Note: standard errors in parenthesis
*- significant at 10%
**- significant at 5%
***- significant at 1%

Table 4 – Equation 2 Results

Independent Variables	Dependent Variable log_UGDS (1)	Dependent Variable log_UGDS (2)
log_TUITIONFEE_IN	1.4113***	1.3402***
	(.5359)	(.2752)
log_TUITIONFEE_OUT	-.1458	---
	(.4895)	
log_ACTENMID	.9536	---
	(1.6376)	
log_ACTMTMID	1.9046	---
	(1.3356)	
log_SAT_AVG	-6.7147***	-3.6074***
	(2.4891)	(.9531)
log_COUNTY_UNEMP	.5516**	.5210*
	(.2712)	(.2658)
log_GRAD_DEBT_MDN	-1.4455***	-1.4779***
	(.2960)	(.2948)
CONTROL	-2.4914***	-2.4624***
	(.3926)	(.2576)
log_ADM_RATE	.4424***	.4858***
	(.1419)	(.1344)
log_RET_FT4	-1.0478**	-.9094*
	(.5189)	(.5094)
log_AVGFACSAL	2.5258***	2.5857***
	(.3124)	(.3089)
log_C150_4	.7671***	.7749***
	(.2302)	(.2297)
constant	26.4012**	12.8204*
	(12.1507)	(6.7667)
R-Squared	0.7750	0.7722
n	210	210

Note: standard errors in parenthesis
*- significant at 10%
**- significant at 5%
***- significant at 1%

In moving from equation 1 to equation 2, there is an increase in model fit and more of the variables are statistically significant. The R-squared increases from 0.7208 to 0.7722, so the log-log regression is able to account for about an additional five percent of the variation in enrollment. The average SAT score, the county unemployment variable, the median amount of debt of graduates, the retention rate, and the constant are statistically significant in the log-log model and were not statistically significant in the previous regression model. Also, the midpoint of the ACT math score is not statistically significant in the log-log model and was statistically significant in the previous model. Overall, the log-log model is a much better fit for this particular data.

Given that equation 2 is in the log-log model form, the results are interpreted slightly different than the previous results. The results for log-log models are written in terms of elasticities or percentages. So looking at column (1) of Table 4, a one percent increase in TUITIONFEE_IN results in a 1.4113 percent increase in UGDS and is statistically significant at the one percent level. This is the opposite of what was expected, and the sign has flipped from the previous regression model. One possible explanation for this relationship is that students associate a higher price with a more valuable education. A one percent increase in TUITIONFEE_OUT results in a .1458 decrease is UGDS, a one percent increase in ACTENMID results in a .9536 percent increase in UGDS, and a one percent increase in ACTMTMID results in a 1.9046 percent increase in UGDS, and none of these three relationships are statistically significant. It is notable, however, the sign of TUITIONFEE_OUT has also flipped from what it was in the previous regression model. A one percent increase in SAT_AVG results in 6.714 percent decrease in UGDS and is statistically significant at the one

percent level. A one percent increase in COUNTY_UNEMP results in a .5516 percent increase in UGDS and is statistically significant at the five percent level. A one percent increase in GRAD_DEBT_MDN results in a 1.4455 decrease in UGDS and is statistically significant at the one percent level. Aside from TUITIONFEE_IN having the opposite sign as expected, this result is puzzling because a higher tuition is likely to also mean a higher amount of debt for graduates, but a higher amount of debt for graduates has a negative effect on enrollment, whereas, a higher tuition appears to have a positive effect on enrollment. Because the CONTROL variable is not logged it is interpreted in a slightly different manner; private institutions have a UGDS that is 2.914 percent lower than that of public schools, and this result is statistically significant at the one percent level. A one percent increase in ADM_RATE results in a .4424 percent increase in UGDS and is statistically significant at the one percent level. A one percent increase in RET_FT4 results in a 1.0478 percent decrease in UGDS and is significant at the five percent level. This is the opposite sign of what was expected, and seems counterintuitive. A one percent increase in AVGFACSAL results in a 2.5258 percent increase in UGDS and is statistically significant at the one percent level. A one percent increase in C150_4 results in a .7671 percent increase in UGDS and is statistically significant at the one percent level.

After running the complete log-log regression, the independent variables that are not statistically significant are removed from the model, so TUITIONFEE_OUT, ACTENMID, and ACTMTMID are removed. The regression is rerun with the remaining variables, and the results are displayed in column (2) of Table 4. The variables in this equation can all be interpreted in the same way as the previous equation. From deleting

the statistically insignificant variables from the equation, the R-squared decreases from 0.7750 to 0.7722, which illustrates that the excluded variables were explaining very little variation in the dependent variable. The COUNTY-UNEMP variable goes from being statistically significant at the five percent level to only being statistically significant at the ten percent level. Similarly, the RET_FT4 goes from being statistically significant at the five percent level to only being statistically significant at the ten percent level. None of the signs have changed, but there are light adjustments in the magnitudes of the effects of the independent variables on the dependent variable, which is to be expected.

From the second model, equation 2, having removed all of the insignificant variables, it is possible to analyze which variables will have the largest effects on the enrollment. This is of importance for institutions that are trying to increase their enrollment numbers. From the variables included, the ones with the greatest effects are the average SAT score and the average faculty salary. Based on these findings, two internal changes, then, that could boost enrollment numbers would be to increase the pay offered to faculty members and to decrease the standards for SAT scores.

V. Summary and Conclusion

This study utilizes data from the College Scorecard Data that is put out by the United Stated Department of Education to examine the relationship between various cost, test achievement, and admission standard variables and the total undergraduate degree-seeking enrollment at 42 different four-year postsecondary institutions in the state of Illinois for 2009 through 2013. The relationships are estimated using Ordinary Least Squares methodology, and the variables are log transformed to get the best

possible model fit and to control for the presence of heteroscedasticity. The variables that appear to have the largest effect on enrollment are the admission rate, which has a positive effect, and the average SAT score, which has a negative effect. The resulting relationship between the main cost variable and enrollment has an unexpected sign, which could be explained by students associating price with the value of the education received from that institution. However, it is puzzling that the median amount of debt of graduates has a negative effect on enrollment, whereas, the cost of tuition and fees has a positive effect on enrollment. More research is needed to look into these particular variables to explain these simultaneous relationships.

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